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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/706,074	11/12/2003	V. Reggie Edgerton	LA-1279-339D1US	6363

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EXAMINER	
NGUYEN, HUONG Q	
ART UNIT	**PAPER NUMBER**
3736	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/706,074	EDGERTON ET AL.	
	Examiner	Art Unit	
	Helen Nguyen	3736	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 February 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *28-43* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *28-43* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12 November 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is responsive to the amendment filed 2/28/2007. Claims 28, 30-35, and 39 are amended, overcoming the previous claim objections and §112 rejections. **Claims 28-43** remain pending.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. **Claims 28-43** are rejected under 35 U.S.C. 103(a) as being unpatentable over Ferrati (US Pat No. 5961541) in view of Iijima (US Pat No. 5190507), further in view of Joutras et al (US Pat No. 5980435).

4. In regards to **Claim 28**, Ferrati discloses a method for assisting and easing the rehabilitation of a patient with an injury affecting locomotion, including spinal cord, stroke or traumatic brain injuries to regain walking capabilities comprising the steps of providing an individually adjustable body weight suspension training system (A,R,S,T,U) (Col.6: 60-67; Col.7: 1-3), as best seen in Figure 5. Ferrati does not explicitly disclose adjusting said training system to an individual's legs. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Ferrati to include the step of adjusting said training system to an individual's legs such as component A to take into account the different

physical dimensions of each patient's legs due to height, thigh length, calf length, etc for the desired fit and thus function of said training system, best seen in Figure 5.

5. Ferrati also does not disclose said system as automated, operating multiple sensors to provide feedback to adjust the automated body weight suspension training system. Iijima discloses an adjustable automated body weight suspension system as explain above operating multiple sensors wherein said sensors provide feedback to adjust the automated body weight suspension training system to provide an improved device that can adjust accordingly to system changes to be more responsive to patient use, best seen in Figure 7. Therefore, it would have been obvious to one of ordinary skill in the art to modify the body weight suspension training system method of Ferrati to make it automated and include the step of operating multiple sensors to provide feedback as taught by Iijima to adjust the automated body weight suspension training system for a superior device that can take into account system changes and thus be more responsive to the patient during use.

6. Ferrati also does not explicitly disclose adjusting the training system to an individual's legs and correcting pressure and guidance to said individual. Joutras et al disclose an analogous locomotion rehabilitation method comprising correcting pressure and guidance to an individual to provide patient specific therapy such as through changes in resistance (Col.43: 19-58). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Ferrati as modified by Iijima to include the step of correcting pressure and guidance to said individual as taught by Joutras et al to provide a superior rehabilitation method that provides patient specific therapy as a result of said pressure and guidance.

7. In regards to **Claim 29**, Ferrati discloses the method further comprising the steps of: (a) utilizing two pairs of motor-driven mechanical linkage units (A), best seen in Figures 1-2 (Col.1: 49-67; Col.2: 1-32; Col.4: 9-12); (b) having each of said units with two mechanical degrees-of-freedom; (c) connecting said units with their drive elements to a fixed base, referred to as "framework" (D), of a treadmill, referred to as "conveyor belt" (B), best seen in Figure 2 (Col.4: 47-58); (d) attaching said linkages' free ends the patient's legs at two locations at each leg, best seen in Figure 2; (e) serving one leg in the sagittal plane of bipedal locomotion with a first linkage pair; (f) serving the other leg in the sagittal plane of bipedal locomotion with a second linkage.

8. In regards to **Claim 30**, Ferrati discloses the method further comprising the steps of: (a) providing a treadmill (B) and (b) providing and adjusting an exoskeleton linkage system (A) over the treadmill with its passive compliant elements in contact with each of an individual patient's legs, best seen in Figure 2 (Col.2: 39-48) and explained above.

9. In regards to **Claim 31**, Ferrati discloses the method further comprising the step of (a) arranging said linkage system (A); (b) reproducing a profile of bipedal locomotion (Col.2: 44-48); (c) standing in a sagittal plane, from a fixed base, best seen in Figure 2.

10. In regards to **Claim 35**, Ferrati discloses the method in which the body weight suspension system includes a treadmill (B) and means for supporting body weight over the treadmill (R,S,T,U) further comprising the steps of: attaching a keyboard, referred to as "remote control,"

to the treadmill wherein a patient, therapist, physician or assistant can input selected kinematic and dynamic stepping parameters to a computer-based control system (Col.2: 26-31; Col.7: 19-23).

11. In regards to **Claim 38**, Ferrati discloses the method further comprising the steps of: (a) minimizing an external mechanical load acting on the patient (Col.4: 22-29), also best seen in Figure 5 (Col.7: 1-12); (b) maximizing work performed by the patient in generating effective stepping and standing during treadmill training.

12. In regards to **Claim 41**, Ferrati discloses the method further comprising the step of: positioning, actively, the hips.

13. In regards to **Claim 42**, Ferrati discloses the method further comprising the step of: controlling, actively, the hips with dual T-bars, best seen in Figure 1-2.

14. In regards to **Claim 43**, Ferrati discloses the method further comprising the step of: controlling, actively, the hips with motorized semi-elastic belts (H) (Col.4: 22-31; Col.2: 39-56).

15. In regard to **Claims 32 and 34**, Ferrati as modified by Iijima and Joutras et al above disclose a method comprising the steps of: (a) controlling a programmable stepping device with a computer-based control system, best seen in Figure 2; (b) controlling a linkage system (A) of the programmable stepping device with the computer-based control system (Col.2: 39-56); (c)

referencing said control system to individual stepping models and treadmill speed (Col.2: 66-67; Col.3: 1-7).

16. However, Ferrati in view of Iijima do not disclose using force, torque, electromyogram (EMG), acceleration, or pressure data to also control said system, sensing said data with sensors at the linkages' exoskeleton contact area and using it as feedback. Joutras et al disclose a method comprising sensing force (Col.40: 7-9), EMG (Col.40: 10), acceleration (Col.43: 13-14), pressure (Col.43: 13), or torque (Col.43: 63) through sensors (Col.39: 17-24) to gather data allowing for specific control and therefore feedback of an analogous rehabilitation method (Col.40: 7-12; Col.43: 50-54).

17. Therefore, it would have been obvious to one of ordinary skill in the art to modify the method of Ferrati as modified by Iijima and Joutras et al to include sensing force, torque, EMG, acceleration, and pressure data from various sensors placed on the exoskeleton and then using it as feedback, as taught by Joutras et al, to improve the method by incorporating specific data allowing for greater subsequent control through feedback. Moreover, it would have been obvious to one of ordinary skill in the art to modify the method of Ferrati in combination with Iijima and Joutras et al to require no wires to attach to the human body for more convenient use.

18. Similarly, in regards to **Claim 33**, Ferrati as modified by Iijima and Joutras above disclose a method comprising the steps of: (a) providing the exoskeleton (A) with a computer control system; (b) providing control algorithms for the exoskeleton linkages' computer control system but do not disclose (c) utilizing said control algorithms for "intelligent" control for biped locomotion wherein said algorithms distinguish between the amount and direction of the

force/torque generated by the patient, by contact of the patient's feet with the treadmill, and by the action of a programmable stepping device and (d) monitoring and controlling each leg separately. However, Ferrati does disclose taking into account treadmill (B) characteristics (Col.3: 1-6). Joutras et al disclose taking into force and torque generated by the patient for the reasons discussed above, as well as providing feedback from such data and others to enable more control, also explained previously.

19. Therefore, it would have been obvious to one of ordinary skill in the art to modify the invention of Ferrati as modified by Iijima and Joutras such that said control algorithms are intelligent and can control between the amount and direction of force/torque generated by contact of the patient's feet's with the treadmill, and by the action of a programmable stepping device, to provide another means of control through feedback for an improved method. Furthermore, it would also have been obvious to one of ordinary skill in the art to monitor and control each leg independently, to provide an even greater amount of control and feedback by differentiating between the two legs.

20. In regards to **Claim 36**, Ferrati as modified by Iijima and Joutras et al disclose the method above but do not disclose the step of utilizing an external digital monitor system wherein the patient's stepping performance is selectively displayed in real time. Joutras et al disclose a method using an external digital monitor to view patient data or activity (Col.41: 38-40). Therefore, it would have been obvious to one of ordinary skill in the art to modify the method of Ferrati as modified by Iijima and Joutras et al to include utilizing an external digital monitor

system to display patient performance in real time, as taught by Joutras et al, as an effective method of relaying patient data.

21. In regards to **Claim 37**, Ferrati as modified by Iijima and Joutras et al disclose the method above but do not disclose the step of utilizing a data recording system wherein the storage of all training related and time based and time coordinated data, including electromyogram (EMG) signals, for off-line diagnostic analysis is enabled. Joutras et al disclose a method utilizing remote transmission of data, such as EMG signals (Col.39: 19-20), to enable remote users to access data (Col.39: 12-23, 42-46). Therefore, it would have been obvious to one of ordinary skill in the art to modify the method of Ferrati as modified by Iijima and Joutras et al to utilize a data recording system wherein the storage of all data for off-line diagnostic analysis is enabled, as taught by Joutras et al, to allow remote users to access said data.

22. In regard to **Claims 39-40**, Ferrati as modified by Iijima and Joutras et al disclose the method above but do not disclose the step of applying stimulation or vibration to selected flexormuscles and extensormuscles and associated tendons. Joutras et al disclose a method comprising providing muscular stimulation to strengthen muscular motion at a predetermined time to permit patients to be ambulatory when they otherwise would not be ambulatory, such as to avoid knee buckling (Col.39: 55-67; Col.40: 1-12). Therefore, it would have been obvious to one of ordinary skill in the art to include in the method of Ferrati as modified by Iijima and Joutras et al the step of applying stimulation or vibration to selected muscles and thus the associated tendons, as taught by Joutras et al, to improve the rehabilitation method by allowing

patients to exercise for longer periods by strengthening the muscles or to help prevent knee buckling.

Response to Arguments

23. Applicant's arguments with respect to Claims 28-43 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

24. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Helen Nguyen whose telephone number is 571-272-8340. The examiner can normally be reached on Monday - Friday, 8 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Max Hindenburg can be reached on 571-272-4726. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

HQN
5/2/2007

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